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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

October 24, 2002

Mr. Dave McCarthy
Atlantic Richfield Company
307 E Park Ave.
Anaconda, Montana 59711

SUBJECT: **Draft Tailings Areas and Evaporation Ponds Work Plan**

Dear Mr. McCarthy:

The Nevada Division of Environmental Protection (NDEP) has received and evaluated the **Draft Tailings Areas and Evaporation Ponds Work Plan,** dated August 26, 2002, regarding the continued environmental investigation of the Yerington Mine, located in Lyon County near Yerington Nevada. This office provides the following comments from NDEP, EPA, BLM, U.S. Fish and Wildlife and other technical representatives of the Yerington Technical Work Group (YTWG).

NDEP Comments

NDEP General Comments

The proposed sample quantities and locations are inadequate to defensibly characterize the various tailings areas. Sampling should not only characterize these materials for all potential constituents of concern and establish background concentrations of naturally occurring metals in soils, but also vertically delineate the characterized material. The limited sampling proposed will not provide adequate information to allow future decisions regarding vertical migration of fluids. It is inadequate to evaluate potential hazards to human health and the environment, does not establish background concentrations of metals for comparison of analytical results, will not provide adequate information to avoid conflict and thus is not in the best interest of all parties concerned. Please propose a statistically defensible sampling plan of all tailings areas and background soil locations that will satisfy the requirements listed above.

NDEP Specific Comments

Page 1 Introduction

The Municipal Sewage Treatment Lagoons as discussed in this paragraph have not been labeled on any of the figures in the report. Because these lagoons are to be investigated as part of this work plan, the figures should be revised to include location labels for the lagoons.

Page 2, **Lined Evaporation Ponds**

This section is confusing. Currently there are three active ponds for the pumpback system not one. Two have an HDPE liner and one is clay lined.

Landfills and Abandoned Features

There are two or more solid waste landfills not one or more. To the northeast is the Arimetco landfill and to the northwest is the Weed Heights/Don Tibbals landfill.

Trans-mine Asbestos Pipe

I think the proper term here is Transite Asbestos pipe.

Page 8; Last sentence has a typo. This conveyor delivered the crushed? to haul trucks for….Should be leached ore or tailings?

Page 9; Oxide Tailings (VLT) Area

VLT has been used in asphalt, concrete and as engineered fill, both on and off the mine property. It was hauled off site for private and county use up until the mid 1990's.
VLT was also used to construct the dams around the sulfide tailings impoundments and for dust control capping.

Page 12; First paragraph

The red dust referred to was present prior to Arimetco's excavation. This site included approximately 13 acres of exposed red dusty tailings. Arimetco's excavation was in the southeast corner. The entire area was capped with VLT by the NDEP as a temporary measure to control dust.

2.5 Lined Evaporation Ponds

Please clarify how Appendix C is to be used to determine years of operation and what particular sections of Appendix C are relevant to this discussion.

Page 13; Weed Heights Sewage Lagoon

Anaconda sewage had previously gone to the finger ponds. The existing sewage treatment lagoons were constructed by Weed Heights / Don Tibbals in 1985. Arimetco had no involvement with the construction or maintenance of the sewage lagoons. Also, sewage lagoons are not labeled in figure 4.

Photo in Appendix D not E also Photo 7 not photo 8.

Page 17; 2.10 Summary of Current Conditions

Add The Arimetco Landfill is still in use by the state contractors.

Page 20; Sulfide Tailings Area

Sample depth may be to shallow. The VLT cover in some areas is over five feet deep.

Finger Evaporation Ponds

May need to sample a little deeper to get to original red material. The dust capping of VLT is up to 12 inches and may be deeper in certain areas.

Figure 4

Add to key that brown line is buried sewer line.

Figures 6
This figure is missing from the report; hence no references to figure 6 could be reviewed and evaluated.

Also the text calls for one sample in each of the pumpback ponds. Two of the ponds have an HDPE liner. If the samples are under the liner, how will it be dealt with?

EPA Comments

EPA General CommentsThe discussion regarding exposure scenarios is incomplete. In order to provide a conservative estimate of risk for comparison, the residential exposure pathway is required to be assessed for each area. This also would give an assessment of the risk any trespassers would encounter although every effort is underway to ensure that the Site is inaccessible. After the data is collected, it should be compared to screening values, such as EPA Region IX Preliminary Remediation Goals. At this time, the determination can be made as to the necessity of a risk assessment for a given area. There is also no discussion of possible exposure pathways for ecological receptors. Regulatory agency staff have observed wildlife in these areas and potential pathways should be considered in planning the investigation.

1) Page 3, Table 1; The background values cited in this report may represent background soil levels, however, it is premature to cite them definitively as background at this time. EPA has also collected a possible background sample, BK-1, with the results included in EPA's "Anaconda, Yerington Mine Site Emergency Response, Assessment Final Report," dated June 30, 2001. EPA can provide this report if needed. Appropriate background levels should be discussed in our Technical Workgroup meetings.

2) As mentioned in prior meetings, any known spill history for the tailings areas should be included. At a minimum, Atlantic Richfield should review NDEP's records of spills and attempt to interview past employees to determine their potential knowledge of spills. In Sections 2.4 and 2.5 only Dalton, a former contractor for Arimetco, is cited as a source for information related to Anaconda's history.

3) The Quality Assurance and Quality Control sections are incomplete and it is our understanding that Atlantic Richfield will be submitting a comprehensive site-wide Quality Assurance Project Plan (QAPP) in accordance with EPA's guidance documents (EPA will provide these on request or they can be obtained from EPA's website). After review of the QAPP, the agencies will further comment on any supplementary Quality Assurance/Quality Control sections in the specific

workplans. Please provide a date for submittal of the QAPP as this must be reviewed and approved prior to initiation of fieldwork.

4) Radionuclide screening and/or analyses should be proposed. At a minimum, all samples should be screened for radionuclides and a percentage of samples should be analyzed in the laboratory.

EPA Specific Comments

1) Page 4; Did NDEP conduct MWMP Leaching Tests or SPLP (synthetic precipitation leach procedures, SW 846 MTD 1312) (Table 2)? Either test is fine, just want to be sure the workplan is accurate.

2) Page 5; The "remolded" permeability test results for the sulfide tailings of a $2X10^{7}$ cm/sec should not be confused with the current in place permeability of these tailings, which is not known. Since the permeability of these tailings may be low, it should be determined in place (recommend double ring infiltrometer test).

3) Page 5, DQOs; An important DQO not mentioned is to determine whether the tailings and evaporation ponds serve as a continuing source of contaminants leached to groundwater. Also, the first DQO should include the other mine units also.

4) Page 9 - Is any data available on runoff or pond water from the VLT? If not, it is appropriate to collect this information. This could provide insight on the leachability of these tailings.

5) Page 14 - Transite pipeline. What was transported in this pipeline? Could this pipeline have served as a source area for contaminants leached to groundwater via leaks?

6) Page 15, photo C1 - It is noted that the 'unlined evaporation pond" appears to cover a much larger area in this photo than is shown on figure 2. This may be significant in locating the original source area for the groundwater contamination, thus borings at depth in this area including leach testing may be warranted.

7) Page 15, 1957 photo - It appears that the oxide tailings area has increased in size, not remained similar in size. The presence of unlined and lined evaporation ponds in the previous sulfide tailings disposal area could add water and mobility to move contaminants into the groundwater causing the present plume of contaminated groundwater.

8) Page 16, 1977 photo - Is there any evidence to suggest that the fluid collection ditches were lined? It is appropriate to collect soil and groundwater samples along these ditch alignments to look for COCs. If these investigations are not proposed for this workplan, which report will include investigations for these presumed unlined ditches?

9) Page 18, Section 3.0; It is premature to draw conclusions regarding the homogeneity of materials in all areas and limiting the amount of sampling proposed based on this hypothesis. Sufficient sampling should be proposed to confirm this hypothesis. Uniformity must also be established with depth. Also, determining whether waste materials continue to serve as a source of contaminants to groundwater should be included as an objective.

10) Page 19; For the "lined ponds", where the type and thickness of the liner is not known, a sample should be obtained by borings and the hole then grouted shut. It is useful to know how these ponds were lined as it impacts both present and past possibilities for water carrying contaminants to groundwater.

11) Page 20, Section 3.1; As stated in the report, many of the evaporation ponds and tailings are unlined. Better estimates of depth are needed to both determine whether there is a continuing source to groundwater and to select an appropriate closure and/or cleanup alternative.

12) Page 22 - How will the potential for the materials to generate fugitive dust be evaluated?

13) Figure 2; The Trans-mine pipe route does not appear to be plotted on this figure.

14) Table 1 - The arsenic concentration for the finger evaporation pond sample is much higher than other samples. A secondary DQO should be to verify or discount, this value.

15) Table 2 - Of most interest perhaps, are the Beryllium Leaching results for the VLT material. It is assumed, not stated, that units are in mg/l. These materials should be collected and leached to confirm or disprove these beryllium results.

16) Table 3; Please check your table for proposed metals and methods of analyses. At a minimum, antimony, silver and thallium should also be included.

17) Appendix, NDEP Leach test results; A reference to the leaching and analytical methods should be included. No data are included for leaching of the Iron Bleed Tailings. Based on Comment # 15, such data should be obtained.

USDI/FWS Comments

USDI/FWS General Comments

Information is needed on the potential uptake of metals and trace elements by vegetation at these sites. Some vegetation may be deeply rooted and may eventually penetrate any cover caps that may be provided on these sites. Vegetation may be consumed by wildlife or cattle, exposing them to the metals and trace elements that are taken up by the plants. Burrowing mammals may experience dermal exposure to the materials (i.e., waste rock, leach heap, or evaporation pond) if they penetrate any caps on these sites. The risks from these types of exposure should be analyzed. Information is needed on the standards and toxicity benchmarks that will be used to evaluate any data that will be collected in relation to this work plan.

USDI/FWS Specific Comments

Section 1.4 Data Quality Objectives, Step 2

An additional criterion should be added to the two that are already present, Specifically, will the collected data be adequate to evaluate the risks to various receptors? As the plan currently is written, we doubt that adequate data will be collected for this purpose. In step 3, down-gradient receptors are mentioned. However, wildlife, including migratory birds, are not mentioned and should be considered as receptors on these sites because they may drink solutions from the various ponds under various conditions.

Section 3.1 Mine Unit Investigations

Material Geochemical and Geotechnical Characteristics, the number of samples to be collected for many of the areas seems inadequate based in the size of the areas, even though past data indicated

homogeneity among samples. We recommend that the total number of samples to be collected be increased.

Section 3.2 Quality Assurance and Quality Control, Solids Materials Analysis

Table 4 is cited but is missing.

Wildlife, including migratory birds, have the potential to drink standing water at any of the evaporation pond sites, and therefore may be exposed to elevated concentrations of metals and trace elements. Therefore, water samples should be collected for metal and trace element analysis from all sites where standing water is present, even if this occurs for limited periods. Information on field parameters should also be collected at these sites, including at a minimum, pH, salinity, and conductivity. Sampling sites should include the pumpback evaporation ponds, with at least one sample from each pond, as the quality of water appears t vary in each pond based on visual observations. For other ponds, such as the lined and unlined evaporation ponds, water is present only seasonally. Therefore, at these sites at least one sample should be collected from each flooded section of each pond when water is present.

Accordingly, please provide the **Draft Final Tailings Areas and Evaporation Ponds Work Plan** which incorporates the above comments. This information must be received not later November 23, 2002, as per approved submittal schedule.

Should you have any questions or if I can be of any assistance, please do not hesitate to contact me at (775) 687-9376 or FAX (775) 687-6396. All future correspondence regarding this subject should be addressed to the undersigned.

Sincerely,

Arthur G. Gravenstein, P.E.
Staff Engineer
Remediation Branch
Bureau of Corrective Action

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